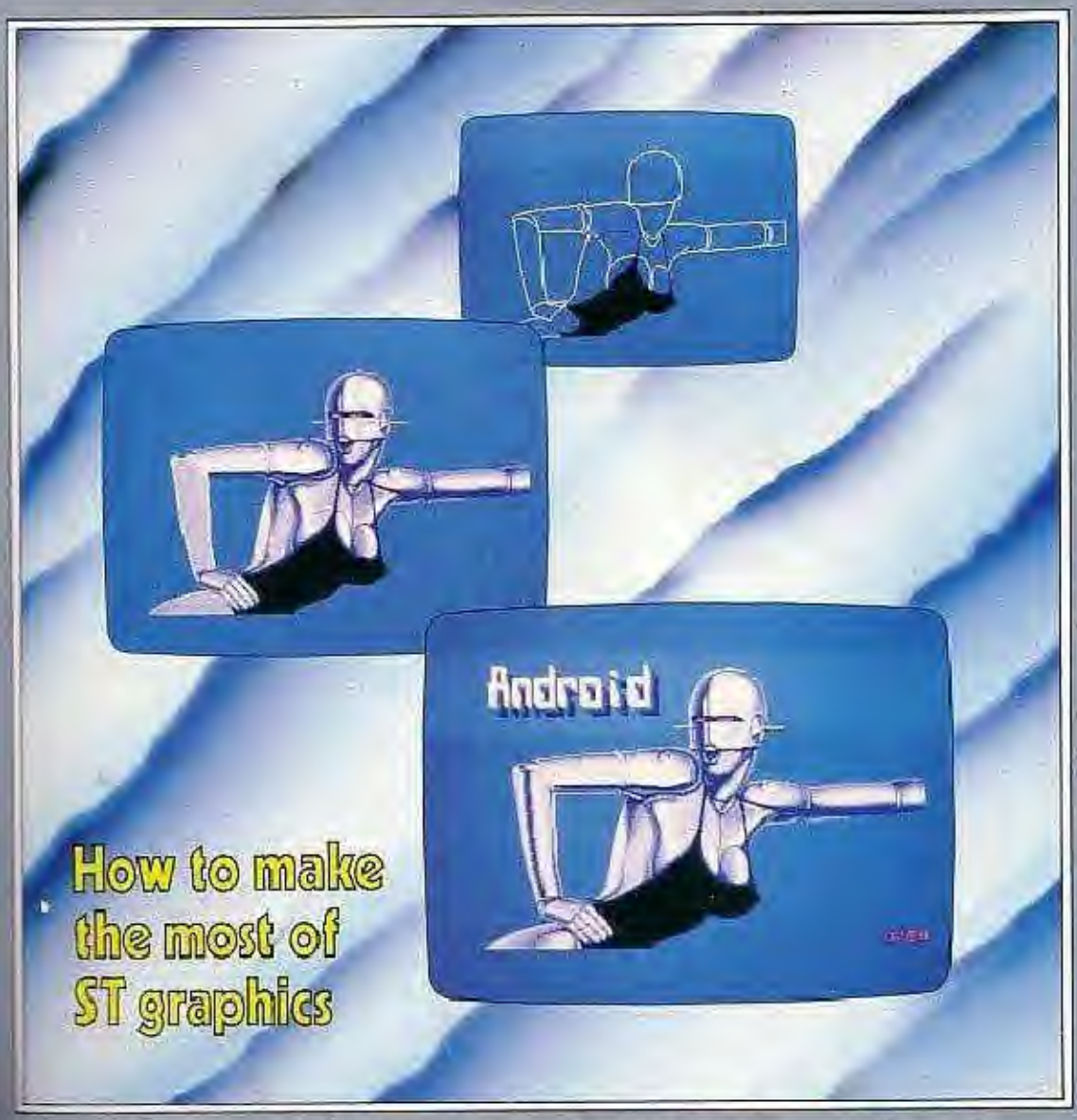
Vol. 1 No. 4 June 1986

Atari ST User



How to make the most of ST graphics

- Double your 520ST's memory: Two techniques reviewed
- Revealed: SOUND advice missing from the ST manual
- Use your mouse to escape from the cunning 3D maze

BRING Twillstar INTO YOUR HOME

ALL PRICES INCLUDE VAT

TCL Special Packages

ATARI
Power Without the Price™

TCL 1
520STM Computer with 500k Disk Drive and High Res Monochrome Monitor **£697.00**

TCL 2
520STM Computer with 500k Disk Drive and Medium Resolution Colour Monitor **£947.00**

TCL 3
520STM Computer with 1 MBYTE Disk Drive and High Res Monochrome Monitor **£747.00**

TCL 4
520STM Computer with 1 MBYTE Disk Drive and Medium Resolution Colour Monitor **£997.00**

TCL 5
1040 STF with built in 1 MBYTE Disk Drive and High Resolution Monochrome Monitor **£918.00**

TCL 6
1040 STF with built in 1 MBYTE Disk Drive and Medium Resolution Colour Monitor **£1148.00**

All TCL Packages come complete with all interconnecting cables and are supplied with ST Basic, ST Logo, and 1st Word

Printers

DOT MATRIX PRINTERS NOW AVAILABLE
Juki 5510 - Gives you 180 CPS & NLQ Standards
£269.00 Inc. VAT

...and thats not all! The Juki 5510 also has full graphics mode, two position 'dip-switch' providing instant compatibility with both the Epson and the IBM Graphic Printer1. Standard 2K memory (expandable to 14K) built-in Parallel Centronics interface and 8-switch international character sets.
If you need colour too, the optional Juki 5510 Colour Kit gives you seven colours. **£112.00**

CITIZEN 120 D
This new citizen 120D with 120 CPS and 25 CPS NLQ comes with tractor and friction feed as standard. IBM and Epson Compatible with TWO years Warranty **£159.00**

CITIZEN MSP10
The new citizen MSP10 with 16 CPS Draft and 40 CPS NLQ. With TWO years Warranty **£269.00**

KAGA KP810
The 80 column printer with 140 CPS Draft and NLQ with friction and tractor feed offering 9 INT character sets. Long life cartridge ribbon and standard centronics interface. **£195.00**
Also available KAGA KP 910 (wide carriage printer) **£379.00**

EPSON LX80
With 100 CPS draft and 16 CPS NLQ and optional tractor adaptor and sheet feeder. This printer has a standard parallel connection and accepts all other Epson serial Parallel boards with external dip switches for easy access and internal IK buffer. It offers a high specification at a low price. **£229.00**

ALSO AVAILABLE

Epson FX 80	£365.00
Epson FX 100F/T	£495.00
Epson FX 85	£369.00
Seikosha GP 50A (Parallel)	£69.00
Seikosha GP 50S inc. Printer I/F + cables	£89.00
Seikosha 1000A (NLQ)	£199.00
Canon PW 1080A (NLQ)	£269.00
Canon PW 1156A	£379.00
Brother EP 44	£228.00
Shinwa CP 80A	£189.00
MP 165	£240.00
Star SG 10	£219.00
Star NL 10	£229.00
Brother HR 15	£349.00
Juki 6100	£285.00
Juki 2200	£275.00
Juki 6300	£799.00

DAISYWHEEL PRINTERS
QUEN DATA DWP 1120 with optional tractor/sheet feeder and 13" paper with facility. This Daisywheel printer with 20 CPS has 96-character printwheel compatible with the QUME. Standard centronics interface, (optional RS232 C) **£139.00**

COLOUR PRINTERS
Canon PJ1080A **£440.00**

TRACTOR ADAPTERS

FX80	£32.00
LX80	£23.00
Juki 6100	£129.00
Juki 6300	£129.00
Quendata DWP 1120	£114.00
Brother HR 15	£95.00

SHEET FEEDER

Juki 6100	£173.00
Juki 6300	£173.00
Quendata DWP 1120	£165.00
Brother HR 15	£212.00
LX80	£55.00

PRINTER RIBBONS

Brother HR 5	£3.45
Brother EP 44	£2.65
Brother M1009	£4.60
Brother HR 15/25 Multi-strike	£5.45
Brother HR 15/25 fabric	£4.85
Canon PW 1156A/1080	£6.85
Daisystep 2000 Multi-strike	£4.00
Daisystep 2000 fabric	£6.30
Epson FX/MX/RX80	£4.50
Epson LX80	£4.80
Epson MX100	£5.80
Epson LQ1500	£8.60
Epson DX multi-strike	£6.40
Epson DX 100 fabric	£4.85
Juki 6100 multi-strike	£3.20
Juki 6100 single-strike	£1.85
Juki 6300 multi-strike	£3.05
Juki 6300 fabric	£4.10
Juki 2200 single-strike	£2.95
Juki 2200 correctable	£2.88
Kaga KP 810/910	£6.85
MP165	£4.50
DX 1 microline 80/82/83	£2.07
Quendata 2000 Multi-strike	£3.97
Quendata 2000 fabric	£6.30
Ritman 80	£6.30
Seikosha GP80	£4.00
Seikosha GP 100/250	£4.30
Seikosha GP 500	£4.95
Shinwa CP80 multi-strike	£5.50
CP80 fabric	£5.46
Wallees WM80 multi-strike	£5.30
Wallees WM80 fabric	£5.46
Wm2000	£5.90

Accessories

SF354
500k Disk Drive **£149.00**

SF314
1 MBYTE Disk Drive **£199.00**

SH207
20 MBYTE Hard Disk **£849.00**

SM124
12" High Resolution Monochrome Monitor **£149.00**

SC1424
14" Medium Resolution Colour Monitor **£399.00**
Printer Lead for ST Series **£12.00**

SERVICES
We have a comprehensive range of spares for the ST. Backed by our in-house Service Department.

CREDIT FACILITIES
Full credit facilities now available nationwide
* LOW DEPOSITS
* FAST FRIENDLY SERVICE
* UP TO 3 YEARS TO PAY
We have negotiated with a leading Finance Company to provide this additional service for our clients. Call for further details

How to Order

You may purchase any of the items listed by cheque made payable to TWILLSTAR COMPUTERS LTD.

All you have to do is list your requirements on a sheet of paper, and we will despatch your goods within 24 hours, subject to availability. Please add the following amounts for Postage and Packing:

Items below £10.00	add £1.50
Items below £50.00	add £2.50
Items below £100.00	add £3.50
Items over £100.00	add £8.00

All prices include VAT at 15%
'No Hidden Extras'
Access/Visa Card Holders:
01-571 5938 or 574 5271
All prices correct at time of going to press

This Voucher is worth £30.00 off the purchase of any of the above listed TCL Special Packages.

£30

This Voucher must be sent with order.
Offer valid until 31st July 1986 only at Twillstar

TCL

TELEPHONE ORDERS
(01) 574 5271
Telex No. 25247 attn TLL

Twillstar Computers Limited

Apex House, Blandford Road,
Norwood Green, Southall, Middx. UB2 4HD

You ain't seen nothing yet..

MIKE COWLEY reporting

IT seems that the 1040ST is only the beginning folks. The ballyhoo surrounding the launch of the one megabyte machine had scarcely died down when rumours began to circulate of even more powerful machines waiting in the wings.

Now admittedly in an industry where truth is as rare a commodity as poverty in Dynasty, one tends to learn to treat such tales with a degree of caution.

After all, computer corporations make the maximum use of hype to keep their rivals as paranoid as possible. They may not actually persuade them to jump out of sixth floor windows but they keep them eyeing the ledge as often as possible.

So what is going on? Well when it comes to finding out about new machines which have cost millions of pounds to develop, there is little point in asking the caretaker – or even most senior executives for that matter.

After all, as was so often pointed out during the Second World War – Careless Talk Costs Lives. In this instance the working "lives" of those who leak information to their mates in the media without the necessary sanction from above. So the only way you can be sure of getting to know what really is happening without sacrificing your informants along the way is to go to the top.

And when it comes to Atari you can't go higher than the Tramiel clan. In this case, it was Sam Tramiel, the president, whom I sought out to find out if there was any substance to the reports of new machines in the pipeline.

"Yes", he admitted. "It's quite true. The one megabyte is just the start. The next one along will be the two megabyte – the 2080ST – than a four megabyte version".

But how much technology do people actually want?

"Just as much as you can possibly give them", says Sam. "It's like owning an automobile. You may not always need that extra power but it's nice to have it there if you do..."

★ ★ ★

TALKING of Sam Tramiel, the Atari president confesses that he is "computer illiterate". He insists that while he knows how to build them and price them, when it comes to making them work he's an idiot user.

While he was employed by Commodore he readily admits he could not get to grips with the bestselling 64. "I simply could not use it", he says.

However in the case of the ST the machine has proved to be a breakthrough, not only for the company, but for Sam Tramiel himself.

"With the ST, I just push a few buttons and it works", he insists. "Mind you this doesn't make me much of a hero when even my four-year-old son can use one".

The 1040ST... only the beginning

★ ★ ★

A SURVEY has shown that it can cost up to $50,000 to develop a software program for the ST. This titbit was dropped by Sig Hartmann, Atari's software supremo, when he visited the UK recently.

So why then with costs as high as this, I ventured to ask, did the company insist that developers pay for their machines in the first place? "We saw this as a way of them demonstrating their commitment", he replied. "It proved to us that they had faith in the machine and Jack Tramiel.

"If we had just handed over the machines, there was no guarantee they would have got around to writing any software any way".

Hartmann went on to point out that Atari will go to considerable lengths to help developers for the ST range. Over in the States software houses are invited to send their writers along to Atari's headquarters to spend a week picking the brains of the corporation's experts. "Unfortunately the cost of such a venture would preclude UK companies taking advantage of this", says Hartmann. "Unless they want to pay their own expenses that is.

"Mind you, the quality of the software being produced in Britain for the ST is still just as good, if not better, than anywhere else in the world".

Hartmann and his team expect to continue working round the clock for some time to come to ensure there is a constantly expanding software base for the ST range. "If I don't come up with the goods I won't be in the job for long", he says.

Just before he flew back to the USA Hartmann pledged that whatever new machines were introduced they would be compatible with the existing software range. "After all, I've got enough grey hairs from this project that there's no way we'd want to start off from square one again", he said.

SOFTWARE FOR THE ATARI ST

MACRO ASSEMBLER

£49.95

A professional quality macro assembler with many useful features for the serious programmer. Standard Motorola 68000 mnemonics. Macro expansions. Over 160 explicit error messages. Fully formatted listings. Large range of directives. Includes a debugger. The macro assembler chosen by Commodore for the Amiga.

MCC PASCAL

£89.95

A powerful Pascal compiler that meets the exacting ISO 7185 standard (level 0). A fast, single pass compiler, generating native code. Comprehensive error handling. 32 bit IEEE format floating point arithmetic and full 32 bit integers. Chosen by Commodore for the Amiga.

LATTICE C

£99.95

The well known Lattice C compiler. A full Kernighan and Ritchie implementation. Comprehensive libraries of UNIX and utility functions. Compatible with Lattice compilers on IBM-PC, Commodore Amiga, QL etc. Full IEEE format floating point arithmetic. Powerful data types including pointers, arrays, structures, unions, register variables etc; macros, conditional compilation and other pre-processors.

MENU+

NEW! FROM MAY 10

£19.95 ON ITS OWN
FREE WITH ANY METACOMCO LANGUAGE*

MENU + provides ST users with a friendly environment to control their programs, using pull-down menus and the mouse. Easy-to-use. Runs single programs or batches, avoids repetitive command line entry. The user can add his own tools, arguments and options. Runs any programs - not just Metacomco products.

ALL METACOMCO PROGRAMMING LANGUAGES FOR THE ST HAVE THESE ADVANTAGES-

- **INTEGRATED RANGE OF LANGUAGES ON THE ST AND OTHER 68000s**
  Metacomco's range of languages for the ST provides an integrated and consistent programming environment for ST programmers. Program modules written in Pascal, Assembler or C can all be linked together. Metacomco's ST languages are compatible with their languages for Amiga and QL. Make it easy to port your programs by choosing Metacomco.
- **FULL GEMDOS LIBRARIES (Source code provided)**
  All Metacomco languages come with a set of GEMDOS libraries, making it easy to program the graphics and the other features of the ST. Full source code of all GEMDOS libraries is provided, allowing programmers to modify them. The source code is well documented.
- **CHOICE OF LINKERS**
  All Metacomco languages include a linker. Metacomco program modules can also be linked using the Digital Research linker.
- **FRIENDLY ENVIRONMENT**
  All Metacomco languages now include MENU +, an easy-to-use programming environment using pull-down menus and the mouse.
- **SCREEN EDITOR**
  A powerful screen editor for preparing programs is included with every language.
- **DETAILED MANUAL**
  Every Metacomco language comes with its own detailed manual.

*EXISTING REGISTERED USERS CAN OBTAIN AN UPGRADE INCLUDING MENU + AT A SPECIAL PRICE. PLEASE CONTACT METACOMCO DIRECT.

METACOMCO

26 PORTLAND SQUARE, BRISTOL BS2 8RZ, UK.
TELEPHONE: BRISTOL (0272) 428781
5353E Scotts Valley Drive, California 95066, USA. Tel: 1-800-252-5362

Lattice is a trademark of LATTICE, INC. GEMDOS is a trademark of DIGITAL RESEARCH INC. UNIX is a trademark of AT + T Bell Laboratories. Amiga is a trademark of Commodore-Amiga Inc. QL is a trademark of Sinclair Research Ltd

PHONE TODAY, OR POST THIS COUPON TO: METACOMCO, 26 PORTLAND SQUARE, BRISTOL BS2 8RZ.
PLEASE SEND ME FOR THE ATARI ST:

MACRO ASSEMBLER	£49.95	☐
MCC PASCAL	£89.95	☐
LATTICE C	£99.95	☐
MENU+	£19.95	☐
MORE INFORMATION		☐

I ENCLOSE A CHEQUE FOR £ _____ OR DEBIT MY ACCESS/VISA NO. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

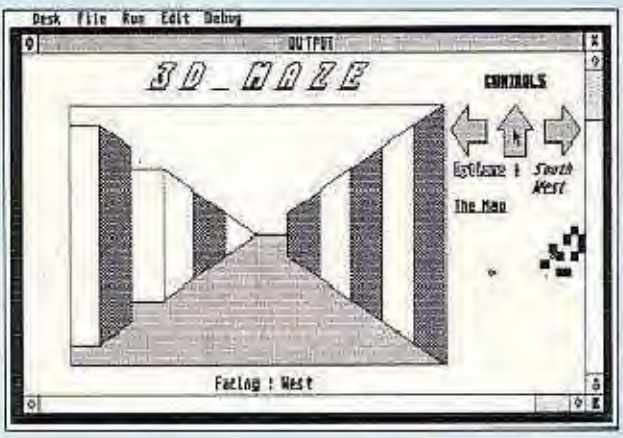
NAME _____ CARD EXPIRY DATE _____

ADDRESS _____

SIGNATURE _____ COUNTRY _____ TEL. NO. _____

Prices include VAT and P& P UK mainland only. Please add £5.00 towards delivery outside U.K. Delivery allow up to 28 days. AUS

3D MAZE



IN 3D Maze you are trapped inside a perplexing labyrinth and must find the hidden transporter in order to escape. You see everything at eye-level and can move forward and rotate left or right.

The computer keeps track of your direction and displays your present view as well as the other possible directions you can move in. It also presents you with a map of the area you have so far covered.

It may sound a doddle, but as you'd expect there is a catch. The Robo-Droids are harmless looking – they appear on the map as slightly shaded spots – but devious fellows who will track you round the maze in a concerted bid to foil your escape.

Needless to say they are not fooled by junctions, dead ends and so on, and will quickly backtrack if they feel they are losing your trail.

Initially only one robot hounds you and it is easily outwitted, but progress to the second level means you have to contend with two of them, and so on. Your enemies steadily become more cunning, fitting themselves with interference mechanisms so they do not appear on the map.

At first the robots only move when you move forward, but in the later stages they move even when you turn round. There are a maximum of six and all have different tendencies, so they never end up all moving to the same place at any one time.

3D Maze becomes nerve-racking as you desperately search for the exit with the relentless robots closing in all the time.

At the beginning of the game you are at the top right of the maze looking South – downwards on the map. To move you move the mouse pointer over one of the large arrow icons and to rotate left or right the left mouse button must be clicked on.

The drawing and filling of the view is done at high speed but try not to move the mouse as it's happening because this slows the process down.

This program is written exclusively in ST Basic and uses the VDISYS commands to change text types and heights. As the listing is annotated with REM statements and uses labelling in conjunction with structured subroutine handling the program can easily be debugged.

Since the program is quite long the desk utilities on the TOS disc must be renamed to free some memory unless you use a ROM system. This is done by sliding the TOS disc write-protector and typing in Basic: NAME DESK1. ACC AS DESK1. AAA.

The program should be saved on a spare disc. Entering the program in the edit window is easier than in the command window and the REM statements can be omitted.

MAJOR VARIABLES

NR%	Number of robots in the maze.
US%	Number of hidden robots.
FS%	Whether the robots move slow or fast.
D%	Represents direction player faces 1-North, 2-East, 3-South and 4-West.
M%(MX%, MY%)	Holds the maze depending on the maximum x and y sizes.
X%,Y%	Players coordinates.
LB%,RB%	Whether left/right wall exists.
XI,YI	Current x and y increments for player.

Stephen Green's exciting arcade game for the ST

```
545  GOTOXY 5-F,5:?SIN;NEXT:H=13:GOSUB HITE:T=0:GOSUB TYPE
550  B$="":IF B$=0 THEN GOTOXY 4,8:INPUT"Want Another Game Dateor ",B$
560  IF B$="Y" THEN GOTO 21 ELSE IF B$="N" THEN CLEARW 2:GOTO 990
570  GOSUB LEVEL:GOTO 25
900  END
990  REM ** READ IN MAZE DATA FROM 10000 **
1000 MAZEREAD:RESTORE 10000
1010 FOR I=1 TO MYC
1020 FOR K=1 TO MXG
1030 READ M(K,I),I:=0
1040 NEXT K,I
1050 RETURN
1055 REM ** CALL 3D PRINT ROUTINES **
1100 VIEW:
1110 ON DL GOSUB 1350,1400,1450,1500
1120 GOSUB DRAWIT:GOSUB UPDATE
1130 IF DL<>1 OR DX<>10 OR WT<>10 THEN 1200
1140 H=48:GOSUB HITE:B$="THE EXIT":FOR K=1 TO LEN(B$):A$=MID$(B$,C,1)
1145 GOTOXY 10+(K*5),18:?SIN;NEXT:H=13:GOSUB HITE
1200 RETURN
1210 REM ** SET UP X & Y INCREMENTS **
1350 X1=0:Y1=-1:RETURN
1400 X1=1:Y1=0:RETURN
1450 X1=0:Y1=1:RETURN
1500 X1=-1:Y1=0:RETURN
1520 REM ** CLEAR SCREEN AND BEGIN NEW ONE **
1600 DRAWIT:
1630 COLOR 1,0,1:BD(1)=50:BD(2)=80:BD(5)=450:BD(4)=340:GOSUB BAR
1650 COLOR 1,1,1:LINEF 50,50,450,50:LINEF 450,50,450,300
1660 LINEF 450,300,50,300:LINEF 50,300,50,50
1670 REM ** CALL WALL DRAW AND UPDATE ROUTINES **
1700 NTS=1:TX1=X1:TY1=Y1:CL1=1:CR1=1:F21=0
1800 ON DL GOSUB 2000,2050,2900,2950
1830 WNTS=NTS-1
1835 GOSUB SIDES
1840 IF LB1=1 THEN GOSUB LEFTWALL ELSE GOSUB NOLW
1860 IF RB1=1 THEN GOSUB RIGHTWALL ELSE GOSUB NORW
1870 TX1=TX1+X1:TY1=TY1+Y1
1875 IF M(TX1,TY1)=1 THEN GOSUB ENDWALL:NTS=MYC
1897 GOSUB ROBOCHK
1900 NTS=NTS+1:IF NTS>MYC+1 THEN 1800
1910 IF F21<>0 THEN NTS=F21:GOSUB ROBOPUT
1920 COLOR 1,1,1,5,2:FILL 250,290
1990 RETURN
2410 REM ** DRAW & FILL LEFT WALL **
2500 LEFTWALL:
2510 LINEF 50+(NTS*EX1),50+(NTS*EY1),50+(NTS*EX),50+(NTS*EY)
2520 LINEF 50+(NTS*EX1),300-(NTS*EY1),50+(NTS*EX),300-(NTS*EY)
2530 IF CL1=1 THEN COLOR 1,CL1,1,3,5:FILL 55+(NTS*EX),55+(NTS*EY)
2540 CL1=(CL1+1) MOD 2
2550 RETURN
2560 REM ** DRAW & FILL RIGHT WALL **
2600 RIGHTWALL:
2610 LINEF 450-(NTS*EX1),50+(NTS*EY1),450-(NTS*EX),50+(NTS*EY)
2620 LINEF 450-(NTS*EX1),300-(NTS*EY1),450-(NTS*EX),300-(NTS*EY)
2630 IF CR1=1 THEN COLOR 1,CR1,1,3,2:FILL 445-(NTS*EX),55+(NTS*EY)
2640 CR1=(CR1+1) MOD 2
2650 RETURN
2660 REM ** DRAW END WALL **
2700 ENWALL:
2705 EX3=NTS*EX1:EY3=NTS*EY1
2710 LINEF 50+EX3,50+EY3,450-EX3,50+EY3:LINEF 450-EX3,50+EY3,450-EX3,300-EY3
2715 LINEF 450-EX3,300-EY3,50+EX3,300-EY3:LINEF 50+EX3,300-EY3,50+EX3,50+EY3
2790 RETURN
2795 REM ** 4-SUBROUTINES TO CHECK FOR LEFT AND RIGHT WALLS **
2800 LB1=M(TX1+1,TY1):RB1=M(TX1-1,TY1):RETURN
2850 LB1=M(TX1,TY1-1):RB1=M(TX1,TY1+1):RETURN
2900 LB1=M(TX1-1,TY1):RB1=M(TX1+1,TY1):RETURN
2950 LB1=M(TX1,TY1+1):RB1=M(TX1,TY1-1):RETURN
2990 REM ** ROUTINE FOR NO LEFT WALL **
3000 NOLW:
3020 LINEF 50+(NTS*EX1),50+(NTS*EY),50+(NTS*EX1),50+(NTS*EY)
3030 LINEF 50+(NTS*EX1),300-(NTS*EY),50+(NTS*EX1),300-(NTS*EY)
3050 RETURN
3055 REM ** ROUTINE FOR NO RIGHT WALL **
3060 NORW:
3075 LINEF 450-(NTS*EX1),50+(NTS*EY),450-(NTS*EX1),50+(NTS*EY)
3080 LINEF 450-(NTS*EX1),300-(NTS*EY),450-(NTS*EX1),300-(NTS*EY)
3097 RETURN
3095 REM ** DRAW VERTICAL WALL LINES **
3100 SIDES:
3110 LINEF 450-(NTS*EX),50+(NTS*EY),450-(NTS*EX),300-(NTS*EY)
3120 LINEF 50+(NTS*EX),50+(NTS*EY),50+(NTS*EX),300-(NTS*EY)
3140 RETURN
3145 REM ** INITIAL DISPLAY ROUTINE **
3200 DISPLAY:H=26:GOSUB HITE:T=29:GOSUB TYPE
3202 B$="3D MAZE":FOR K=1 TO LEN(B$):A$=MID$(B$,K,1):GOTOXY 4+(K*2),1:
3203 ?SIN;
3207 NEXT:H=13:GOSUB HITE:T=0:GOSUB TYPE
3250 RESTORE 10500
3255 FOR K=1 TO 84 STEP 4:READ A,B,C,D:LINEF A,B,C,D:NEXT
3260 COLOR 1,1,1,2,7:FILL 475,75:FILL 505,75:FILL 575,75
3270 T=16:GOSUB TYPE:GOTOXY 27,6:?"Options :"
3275 T=9:GOSUB TYPE:GOTOXY 29,1:?"CONTROLS"
3277 T=8:GOSUB TYPE:GOTOXY 21,8:?"The Map":T=0:GOSUB TYPE
3290 RETURN
3295 REM ** SET LETTER HEIGHT & TYPE CONTROL **
3300 HITE:C=CONTRL:P=PTSIN
3310 POKE C,12:POKE C+2,1:POKE C+6,0:POKE P,0:POKE P+2,H:VDISYS(0):RETURN
3320 TYPE:C=CONTRL:IN=INTIN
3340 POKE C,106:POKE C+2,0:POKE C+6,1:POKE IN,T:VDISYS(0):RETURN
3350 REM ** CHECK UNTIL LEFT MOUSE BUTTON PRESSED **
3400 CMOV:
3440 A#=GB:CONTROL=PEEK(A#):GLOBAL=PEEK(A#+4):GINTIN=PEEK(A#+8)
3450 GINTOUT=PEEK(A#+12):ADDRIN=PEEK(A#+16):ADDROUT=PEEK(A#+20):GEMSYS(79)
3470 IF PEEK(GINTOUT+6)<>1 THEN 3440
3490 FX=PEEK(GINTOUT+2):FY=PEEK(GINTOUT+4)
3500 IF FX<450 OR FX>600 OR FY<100 OR FY>150 THEN 3440
3510 IF FX<500 THEN GOSUB ROL ELSE IF FX<550 THEN GOSUB FWD ELSE GOSUB ROR
3590 RETURN
3600 REM ** SPIN LEFT **
3610 ROL:DL=DL-1:IF DL<1 THEN DL=4
3630 RETURN
3640 REM ** SPIN RIGHT **
3650 ROR:DL=DL+1:IF DL>4 THEN DL=1
3670 RETURN
3680 REM ** PROCESS FORWARD INTO MAZE **
3700 FWD:
3710 ON DL GOSUB 1350,1400,1450,1500
3720 IF M(X1+X1,Y1+Y1)<>0 THEN RETURN
3730 DX=DX+X1:DY=DY+Y1:F21=3
3735 T=24:GOSUB TYPE
3737 C1=4:RESTORE 11000:FOR K=1 TO 4:ON K GOSUB 1350,1400,1450,1500:READ A,B
3739 GOTOXY 33,5+K:IF K<4 THEN ?SPACE$(3)
3741 IF M(DX+X1,DY+Y1)=0 THEN GOTOXY 32,C1:?A$;" ":C1=C1+1
3743 NEXT:T=0:GOSUB TYPE
3780 RETURN
3790 REM ** SHOW CURRENT DIRECTION **
3800 UPDATE:GOTOXY 12,18:?"Facing : ";D$(DL);" ":RETURN
3875 REM ** UPDATE THE MAP **
3900 MAP:
3920 COLOR 1,0,1:PCIRCLE LX1,LY1,3
3950 LX1=460+(DX*8):LY1=(64+(DY*8)):COLOR 1,1,1:CIRCLE LX1,LY1,3
3995 RETURN
3997 REM ** SET ROBOTS POSITIONS **
4000 ROBOSET:RANDOMIZE(0)
4040 FOR K=1 TO NR*3 STEP 3
4050 R1=1+RND*17:R2=1+(RND*8):IF M(R1,R2)<>0 THEN 4050
4060 R(K)=R1:R(K+1)=R2:MF=
4070 NEXT:RETURN
4090 REM **
4100 ROBOTS:
4120 FOR L=1 TO NR*3 STEP 3:COLOR 1,0,1,2,2:GOSUB RMAP
4150 MF=0:RC=LPS(L),LPS(L+1)=C
4160 IF (L+1)/3=INT((L+1)/3) THEN GOSUB TP:GOSUB TM ELSE GOSUB TM:GOSUB TM
4165 R(LPS(L),LPS(L+1))=0
4170 IF MF<>0 THEN LPS(L)=LPS(L+1)=1:GOTO 4200
4190 LPS(L)=R(L):LPS(L+1)=R(L+1):GOSUB RANDOM
4200 IF R(L)=EC AND R(L+1)=MY THEN DE=0
4210 COLOR 1,1,1,2,2:GOSUB RMAP:NEXT
4260 RETURN
4290 REM ** TRY TO MOVE ROBOT N/S **
4300 TP:IF MF<>0 THEN RETURN
4310 IF R(L+1)<DY THEN A1=2 ELSE IF DY<R(L+1) THEN A1=4
4320 ON A1 GOSUB 1350,1400,1450,1500:IF M(R(L)+X1,R(L+1)+Y1)<>0 THEN RETURN
4330 R(L)=R(L)+X1:MF=1:RETURN
4340 REM ** TRY E/W **
4350 TM:IF MF<>0 THEN RETURN
4355 IF DX<R(L+1) THEN A1=1 ELSE IF R(L+1)<DX THEN A1=3
4360 ON A1 GOSUB 1350,1400,1450,1500:IF M(R(L)+X1,R(L+1)+Y1)<>0 THEN RETURN
4370 R(L+1)=R(L+1)+Y1:MF=1:RETURN
4375 REM ** RANDOM MOVE **
4400 RANDOM:RANDOMIZE(0)
4410 A1=1+INT(RND*4):ON A1 GOSUB 1350,1400,1450,1500
4415 IF M(R(L)+X1,R(L+1)+Y1)<>0 THEN 4410
4420 R(L)=R(L)+X1:R(L+1)=R(L+1)+Y1
4430 RETURN
4440 REM ** CHECK FOR ROBOT IN VIEW **
4500 ROBOCHK:IF F21<>0 THEN RETURN
4505 FOR F=1 TO NR*3 STEP 3:IF F21<>0 THEN 4508
4506 IF TX1=R(F) OR TY1=R(F+1) THEN 4508
4507 F21=NTS
4508 NEXT F:RETURN
4509 ROBOPUT:IF F21=0 THEN RETURN
4510 PX=(400-(EX*2))/400:TPX=PX*NTS:X1=-TPX:NL2=NL/2
4520 NY=2-1(250-(EY*2))/(250*NTS)
```

```
4500 RESTORE 11000:FOR K=0 TO 33:READ DX,DY,XL,YL
4520 DX=33+(KD2+XL)+XL+3L-(MD+XL)
4555 YD=ABS(175-YY):IF YY>175 THEN YD=-1 ELSE YY=1
4560 IY=YY+(INT(YD)/ABS(YL)+YL-(INT(YL))
4565 IF X>4 THEN 4570 ELSE COLOR 1,0,1,1,1
4567 BX(1)=DX+1:BX(2)=IY+20:BX(3)=33+XL:BX(4)=IY+YL+20:GOSUB BAR
4570 LINEF DX,DY,DX+XL,IY:LINEF DX,DY,DX,IY+YL
4580 NEXT K
4690 RETURN
4695 REM ** VDI CALL TO DRAW A BAR **
4700 BAR:C=CONTRL:P=PTSIN:POKE C,11:POKE C+2,2:POKE C+6,0:POKE C+10,1
4710 FOR D=0 TO 3:POKE P+(D*2),BX(D+1):NEXT:VDISYS(0)
4715 SOUND 1,10,4,4,2:SOUND 1,0,0,0,0
4720 RETURN
4730 REM ** DRAW VISIBLE MAP PARTS **
4800 MAPDR:COLOR 1,1,1,2,1:FOR K=1 TO 4:ON K GOSUB 1330,1400,1450,1500
4805 XT2=X3+K1:DWT=YT+K1
4810 IF M(XT2,DWT)=0 THEN 4830
4812 UL=45+(XT2*8):ULI=1+8*(DWT+1)
4815 LINEF UL,ULI,UL+8,ULI:LINEF UL+8,ULI,UL+8,ULI+8
4816 LINEF UL+8,ULI+8,UL,ULI+8:LINEF UL,ULI+8,UL,ULI:FILL UL+2,ULI+2
4830 NEXT:RETURN
4850 RETURN
4860 REM ** DRAW ROBOT SYMBOLS ON MAP **
4900 RMAP:PCIRCLE 4+8+(RX(L)+8),14+8*(RY(L+1)+8),3:RETURN
4910 REM ** UPDATE PLAYING LEVEL **
4950 LEVEL:LEV=LEV+1:T=4:GOSUB TYPE:GOTOXY 4,8
4960 ?"But Now Try LEVEL ";LEV:GOTOXY 4,10
4965 IF LEV>3 THEN FS=1 ELSE FS=0
4970 IF (LEV MOD 2)=0 THEN NR=NR+1:US=0 ELSE US=US+1
4975 IF NR>6 THEN NR=6
4980 IF NR=1 THEN I$="is" ELSE I$="are"
4990 ?"There ";I$;" ";NR;" Robo-Droid(s) on the maze now"
5000 GOTOXY 4,12:INPUT"Return To Play",A$
5020 RETURN
9999 REM ** MAZE DATA **
10000 DATA 1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1
10010 DATA 1,0,0,1,0,0,0,0,0,0,0,0,0,0,1,0,1
10020 DATA 1,1,0,1,0,1,1,0,1,1,1,1,1,0,0,0,1
10030 DATA 1,1,0,0,0,0,0,0,0,0,0,0,0,1,0,1,1
10040 DATA 1,1,0,1,1,1,1,1,1,1,0,1,0,0,0,0,1
10050 DATA 1,0,0,0,0,0,1,0,0,0,0,0,0,1,1,1,1
10060 DATA 1,0,1,0,1,1,1,0,1,0,1,0,1,0,1,0,1
10070 DATA 1,0,1,0,0,0,0,0,1,0,1,0,0,0,0,0,1
10080 DATA 1,0,1,0,1,0,1,0,0,0,0,0,1,1,1,1,1
10090 DATA 1,0,0,0,1,0,1,1,1,1,0,1,1,1,0,1,1
10100 DATA 1,0,1,1,1,0,0,0,1,0,0,0,0,0,0,0,1
10110 DATA 1,0,0,1,0,0,1,0,1,0,1,1,0,1,1,0,1
10120 DATA 1,1,0,1,0,1,1,0,0,0,1,0,0,0,0,0,1
10130 DATA 1,1,0,0,0,0,1,0,1,0,1,0,1,1,1,0,1
10140 DATA 1,1,0,1,1,0,1,1,1,0,1,0,1,0,1,0,1
10150 DATA 1,0,0,1,1,0,0,0,1,0,0,0,0,0,0,0,1
10160 DATA 1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1
10499 REM ** LINE DATA FOR ARROWS **
10500 DATA 512,100,537,100,537,100,537,75,537,75,545,75,545,75,525,50
10510 DATA 525,50,505,75,505,75,513,75,513,75,513,100
10520 DATA 475,100,475,87,475,87,495,87,495,87,495,65,475,65,475,65
10530 DATA 475,65,475,50,475,50,455,75,455,75,475,100
10540 DATA 575,100,595,75,595,75,575,50,575,50,575,65,575,65,555,65
10550 DATA 555,65,555,87,555,87,575,87,575,87,575,100
11000 DATA North,East,South,West
11099 REM ** ROBOT DATA **
11100 DATA 225,75,50,50,200,125,100,75,225,150,50,125
11110 DATA 200,275,60,10,290,200,-60,-80,275,150,-50,125
11120 DATA 250,200,-25,75,250,110,40,5,270,115,-40,-5,300,200,-100,-75
11130 DATA 240,85,5,10,245,95,-5,-10,255,85,5,10,260,95,-5,-10,275,75,-50,50
```

This program is designed to run in the monochrome hi-res mode. It will need extensive modification to run on a colour monitor or a TV.

Design your own 'Scrabble'

Program: Word for Word
Price: £39.95
Supplier: Software Express, 514-516 Alum Rock Road, Alum Rock, Birmingham B8. Tel: 021-328 3585.

WORD For Word from Bay View is a good computer version of Scrabble. It can be played by up to four people, or three people and the computer.

It uses the mouse for many of the commands, especially to point to the board, to show where the word is placed.

Why would you buy a computer Scrabble game? Besides being a good fun game, you might wish to test your wits against the computer or to increase your vocabulary. Thirdly it is often difficult to find a player at your level.

Word For Word helps in all these categories, and offers a better reason for buying it – you can design your own board.

The game uses the normal scrabble board, with squares that double or triple the value of letters, and other that will double or triple the value of words.

There are also bonus squares that increase the value of a letter by a fixed amount. There are sample boards with different designs that can be used, as well as a board that you design yourself.

The computer plays at three levels – beginner, intermediate and advanced. The computer thinks out loud and you can see the words and the placement of the words on the board as it cogitates.

At the beginner level it can be beaten easily. At intermediate it plays well and at advanced level, its play is very impressive indeed.

Just like in the board game, you can challenge your opponent about the validity of his words.

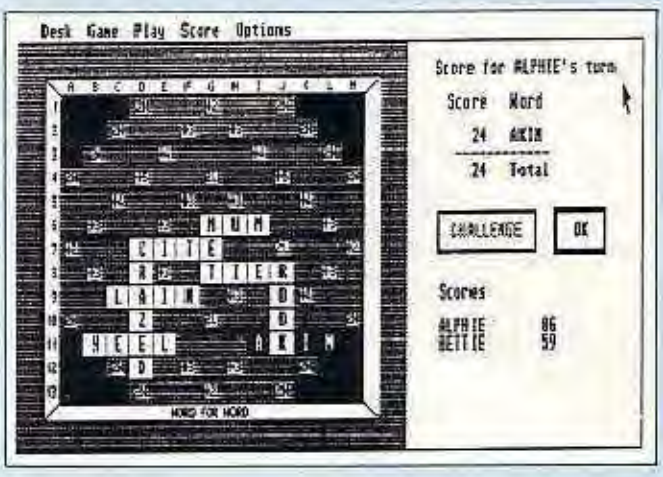
The computer has a 50k dictionary built into the system. However it cheats. Every so often in the advanced level it will throw in a bogus word.

I don't think this is an error on the part of the programmer, but a deliberate feature to keep human players on their toes.

You too can make up words, and when the computer challenges your effort, explain that you have looked up the word in a dictionary. You do this by clicking the Correct box – but it takes a pretty low type to cheat a dumb computer!

Final feature of this game is the ability to design and save your own board and letter values. It is easy to do this using the mouse.

This feature makes the game much more fun. I always thought that it was unfair to have only one X and now I can regularly play with 12 Xs. This makes for a much higher scoring game.



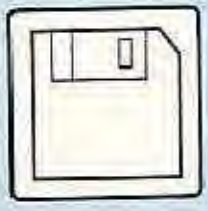
You can also vary all the letter frequencies as well as the letter values. In the standard game you play using six tiles but it is easy to change this to seven or more.

With blank squares and lots of triple words and high values for exotic letters, the whole character of the game is changed.

The package comes with a comprehensive manual but this is hardly needed as the program is so easy to use with its drop down menus.

Play is quick and exciting and uses the ST's capabilities well. The mouse is used to good advantage both in the manipulation of the letters and pointing to the spot where they should go.

Sol Guber



For the young in heart

Program: Treasure Island
Price: £39.95
Supplier: Windham Classics

THIS adventure game, based on the classic Stevenson novel, is designed for the younger adventurer, say aged about 8 to 15.

It uses the 16 colour, 40 column mode and all the major characters are brought to life through pictures.

The puzzles are not difficult, little humour is involved and the parser is of average quality.

My eight-year-old daughter certainly likes Treasure Island. The graphics are not great, but

→

then she says that it would distract her if the pictures were bigger and there would be less writing on the screen.

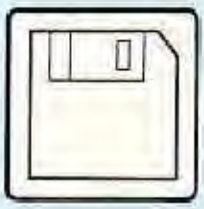
She likes the idea of having a scene and a picture of the person to whom she is talking, and also appreciates the list of the vocabulary words supplied in the package.

There is also a command called Words which lists the appropriate words for each scene.

A great deal of help is on offer during the early stages of the game. It is very easy to perform the correct actions when the computer prompts you that Bones is getting thirsty and wants something to drink.

Also appreciated was the fact that there is no scoring in the game, and when there is an object that is really needed later in the game, you cannot leave its vicinity without picking it up.

This facility would have been useful in Hitchhiker's Guide, as I never thought of picking up the fluff.



When you type Save you can save at any of 10 positions. When you specify the position, you can also specify a 30 letter message to remind you next time of what was saved.

My daughter took about 45 minutes to leave the tavern and get on to the ship. She was only killed once during the first chapter of the book, and it was her own fault, because the computer told her that there were loud noises coming from the parlour and she went to investigate.

Each piece of the puzzle in retrospect was logical and seemed fair. She got lost on the path to Bristol, but the computer helped her find her way.

She thought the music that was being played was good and appropriate. It also quieted down to let her read the text.

The next day she wanted to spend another hour on the Hispaniola. The lack of really good graphics was more bothersome now, and she complained that the game seemed harder.

Having read the book, she knows what to do and what to expect, but this isn't a real advantage.

I would give this game a B for effort and execution. The adventure is interesting and playable. The Word Window feature helps you to get through the puzzles and find the treasure.

But it really hasn't used many of the ST's facilities. There is too much disc accessing during the game, even though the pictures are not full screen. The pictures could be drawn in much more detail, and the sound capabilities utilised more.

However it is a good first effort and young adventurers will enjoy it.

Sol Guber

ATARI ST

Power Without The Price!

FREE SOFTWARE

When you buy one of the new Atari ST computers from Silica Shop, you will receive a large and varied software package free of charge. This package covers several applications and comprises a total of nine titles. All ST's now have TOS/GEM on ROM, and the total list of free software is as follows:

1) GEM - *DR Desktop environment with WIMP (on ROM)*
2) TOS - *Tramiel Operating System (on ROM)*
3) 1st WORD - *Word Processor by GST using the GEM environment and multiple windows*
4) BASIC - *Personal Basic by DR (with manual)*
5) LOGO - *Logo language by DR (with manual)*
6) DOODLE - *Simple paint-based drawing package (works on mono or colour systems)*
7) MEGAROIDS - *Asteroids type game by Megamax*
8) NEOCHROME - *A powerful colour paint and graphics package (only useable with colour systems)*
9) CP/M EMULATOR - *Allows the use of DR's Z80 CP/M software to run on any ST system*

3rd PARTY SUPPORT

The power and potential of the ST range of computers is creating a flood of new software titles, peripherals and accessories from third party manufacturers. Titles range from word processing to spreadsheet programs, from graphics and games to database management - all with those easy drop-down menus and windows.

520ST-M

NEW 512K 520ST-M KEYBOARD:

NEW 1024K 520ST-M+ KEYBOARD:

£347

1040ST-F

1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

£799

THE ATARI EXPLOSION!

FREE CP/M EMULATOR

IBM COMPATIBILITY

20Mbyte HARD DISK £739

NEW ST SOFTWARE PACKAGES

VIP PROFESSIONAL - LOTUS 1-2-3™ CLONE

SILICA SHOP

WE ARE THE UK's No1 ATARI SPECIALISTS

- FREE POST & PACKING ON MAIL ORDERS
- FREE NEXT DAY DELIVERY
- INFORMATION MAILING SERVICE
- TECHNICAL SUPPORT TEAM
- HIGHLY COMPETITIVE PRICES
- AFTER SALES SUPPORT SERVICE
- REPAIR SERVICE ON ATARI PRODUCTS

SILICA HOTLINE 01-309 1111

SILICA SHOP LTD, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

SEND FOR FREE ATARI ST LITERATURE

To: Silica Shop Ltd, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

PLEASE SEND ME FREE LITERATURE ON THE NEW RANGE OF ATARI ST COMPUTERS

Mr/Mrs/Ms: Initials: Surname:

Address:

Postcode:

Do you already own a computer
If so, which one do you own?

Give the artistic mouse its head

Kev Bulmer concludes his series on ST graphics with a look at technique

HAVING already taken a look at two of the available graphics packages for the ST, Degas and Neochrome, we shall now start to use them.

The techniques used when drawing on a computer screen are quite different from those of drawing on paper, although the similarity is increasing as the hardware improves.

I have drawn with keyboards, joysticks, trackballs, light-pens, touch tablets and the ST mouse, and I find that the mouse is my favourite, with the touch tablet coming a close second.

The light pen would seem to be the closest thing to drawing with a pen – as the name suggests – but holding your hand up to the monitor screen tires your shoulder and makes it difficult both to control the pen and to concentrate. With the ST and mouse we are as close to the physical act of drawing as we are likely to get.

The first thing to consider when painting with your micro is the range of colours you intend to use. At the moment the ST gives a choice of 16 colours from a palette of 512 in the lowest resolution. To make the choice you obviously need to have a good idea of what you want to draw.

Every object in the picture will need certain colours defined. It is a good idea to aim for at least three shades of each colour for shadows. To produce darker shades of the same colour simply reduce the red, green and blue values by one until they near zero.

Always experiment, though, because sometimes a little more red or blue in shadow colours can look good. Professional artists rarely use black in their paintings because they claim that it is not found in nature, and it is a dull colour anyway. Instead they add purple or red to shadows, which may sound daft but really works.

Adding blue to highlights has a similar effect. Don't forget when planning your palette that if two objects are different shades of the same colour, grey for instance, then the darkest shade of one object may be useful as the brightest shade of another, thereby saving a paint pot.

Another thing to bear in mind is the animation facility in Neo-chrome. If you intend to use this feature the sequence of colours has to be planned from square one.

Don't forget that by using the conversion routine from the last issue you can draw with Degas and then use the Neo slide show and animation facilities. I used this animation to make the candles flicker on the demon shown last issue and for the impossible waterfall.

To achieve this illusion of movement you should set aside at least three colours to cycle through to allow the eye to discern a direction of motion. With just two colours movement could be in either direction and the illusion does not work. In the waterfall picture I used eight different blues to create a smooth flow which does not noticeably repeat itself.

A useful time saver in Neo is to use the line command with the right-hand mouse button. Neo then draws the line using the colours between the animation arrows. Each colour is used only once and the number of pixels it covers is calculated as an average.

I did not use the line draw routine with the waterfall since it would have given the water too regular an appearance, and I also wanted the water to appear to flow faster in the centre than it

did at the edges. To create this effect I used each colour over more pixels in the centre of the flow than at the edges.

A useful tip to remember when planning your colour scheme is well demonstrated on the bouncing ball demos, now running on several micros. The ball seems to stand proud of the background, yet there is no perspective to the image, only colour differences.

So how does the illusion work? The spectrum, as we all know, ranges from red to blue. At the red end of the spectrum are the warm colours and at the blue end the cold colours.

On a painting warm colours always seem to be in front of cold ones and this effect is especially noticeable on most computers where, with the honourable exception of the Atari range, there are only very vivid colours to choose from. The bouncing ball stands out so well because it is bright red in front of a background of blues.

When starting a picture I use a single pixel brush and the K-line option to block in the composition. However if there is a symmetrical object of any appreciable size I set up the mirror option and draw that first.

Once the object is drawn it can be moved into its proper position with the excellent copy or move features built into Degas. If you want to use mirror to draw a shape, but you only want a single pixel centre line, put the program into slow draw mode and block copy half of the finished image one pixel aside.

One of the features I would have liked to see in Degas is the ability to draw an exact square. As things stand you have to judge whether you are faced with a square or a rectangle. Actually it is simple to calculate. First draw a line at 45 degrees, in other words one pixel up for each pixel across on each successive line.

Then select frame, place the start point on this line and make sure that two opposing vertices of the framework also fall on the line. When the shape is drawn you will have a perfect square.

Remember that you can build up the shape away from where you want it, remove the construction lines and X-ray copy it into position. A perfect circle can be generated by simply holding down the Alternate key as you click on the centre point.

One thing about computer graphics which tends to make them instantly recognisable is the stepping which occurs on curves or diagonal lines. The solution to this problem is simple. Place in the corner of each step a pixel of a colour approximately half-way between the background colour and the object colour.

Use the zoom function – F1 on Degas – which makes it easier to do. This tricks the eye into thinking that the line is smooth. This method of tricking the eye can be used in a variety of situations including simulating a finer line than pixel width, producing diagonal text or creating glow effects.

A nice effect which has previously been difficult to calculate becomes fairly easy because of the way in which colours are created on the ST. Fading between one colour and another, say red and green, is accomplished by averaging out the difference between the red, green and blue sliders.

If your red were composed of seven red units, no green units and two blue units and your green consisted of one red, seven greens and no blues, a mid-colour would have four reds, three greens and one blue.

This effect is useful for painting skies or sunsets. A point to remember about the sky is that it is always paler on the horizon than overhead. Look out of your window.

A more familiar way of depicting depth in a flat image than that of warm and cold colours is perspective drawing. This is too complicated to go into here in any great detail, but one useful way to work out accurate perspective in a picture is to draw the horizon, choose a vanishing point, and the use "rays" to draw the perspective lines.

Another way, which leaves less messy construction over your picture, is to use line from the vanishing point to draw the perspective lines and then cancel the instruction with the right hand mouse button, leaving the cursor on the calculated pixel.

The same formula can be used to calculate shadows. Choose a point on your picture to be

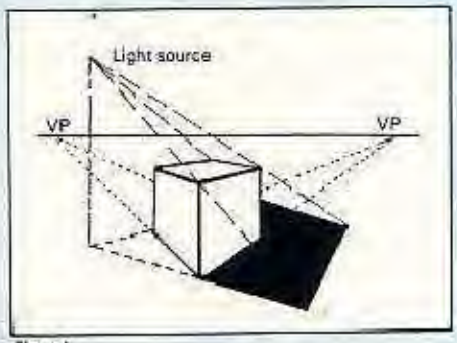


Figure I

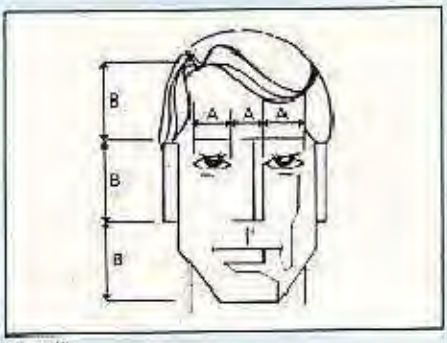


Figure III

the light source and link this, through the corners of the objects on screen, to the ground and then join up the dots – see Figure 1.

Another form of perspective is aerial perspective. If you look at a landscape stretching into the distance you'll notice that the further away an object is, the paler its colour.

The best example of this is a photograph of a mountain range poking through a veil of mist – the peaks seem to be fainter the further they are from you. What happens is that the dust in the air between the viewer and the mountains is reflecting the colour of the sky and this acts like a filter.

The result is that if the sky is light, objects in the distance are lighter, but if the sky is dark, distance causes things to look darker. A perspective grid can really benefit from this technique since the lines of the grid appear narrower in the distance than the foreground.

Human anatomy is a common source of trouble for artists. It used to be said that the hardest thing in the world to draw is the human face, followed by the hands and then the body, and that if you could master these things you could draw anything.

Whether this is true or not a study of anatomy is very worthwhile, but again it is too much for this article to go into. However there are a few formulae which generalise the human form, and which can help.

There are seven and a half heads to a human being. The shoulders are two heads wide and the hand is half of a face across – see Figure II. The face divides into three equal parts – from the top of the forehead to the eyebrows, from the eyebrows to the end of the nose and from the nose to the chin – see Figure III.

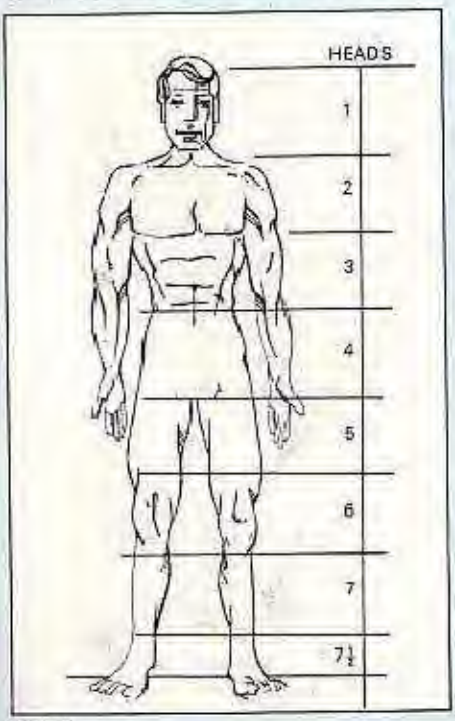


Figure II

Don't forget that you can often do other things with your pictures once you've drawn them. I bought a copy of Colourspace at the Atari User Show and when I got it home I discovered some useful features which I had not seen advertised. As well as a "light synthesiser" Colourspace is also a Neo-chrome picture processor.

You can load two pictures at once into memory, one as a foreground and the other as the background, merge them together, squeeze them to one side or to the top of the screen, reduce them to a quarter size, reflect them side to side or top to bottom and define a distorted plain on which to print the picture. Your picture can then be saved out again.

A feature I really like is that Colourspace extends the Neo-chrome animation feature so you can now have two sets of rotating colours going at once, and the speeds and directions of rotation can be different for each.

I loaded up my demon picture, set up a star scroll coming out of the screen, moved the origin of the scroll into the demon's mouth and set up gravity. It then looks as if the creature is spitting out fire. This program is a terrific graphic tool as well as a great way to relax.

The new 1M

With a memory like we haven't for

1b 1040STF

that you can be sure gotten a thing

The Atari 1040STF employs state of the art 16/32 bit technology. Yet its price is unbeatable.

The ST range of computers already has a large number of software programmes available, including word processors, spreadsheets and databases, as well as a variety of programming languages and specialist business packages.

The 1040STF will also run software written on several other popular operating systems, including CP/M.

It has a 1024K Ram, integral 1Mb (unformatted) double-sided 3½" disk drive, two-button mouse and built-in power supply.

The operating system is in Rom, leaving Ram free for applications. Basic and Logo programming languages complete the package.

With 12" monochrome monitor, we recommend it sells for £799 excluding VAT saving you at least £1600 against its nearest rival. The price of our 14" colour system is a remarkably low £999 excluding VAT.

As the American magazine 'Byte' commented, "for some time to come the 1040STF will be the clear leader in price/performance."

For the name of your nearest dealer, ring Teledata on 01-200 0200.

And that includes an unbeatable price

ATARI
Power Without the Price™

ATTENTION! ATARI 'ST' OWNERS

ACTION SOFTWARE SUPPLIES

ARE GIVING AWAY A FREE DISK!!
WITH EVERY!! SOFTWARE TITLE
YOU BUY. (WORTH £4)
+ 10% EXTRA DISCOUNT !!!
WHEN YOU SPEND OVER £150.00

ACTIVISION
Borrowed Time 49.95
Hacker 44.95
Mindshadow 49.95

BATTERIES INCLUDED
Degas 39.95

CASHLINK
Account Package 339.25

HABA
Dex 39.95
Hippo 'C' 74.95
Merge 39.95
View 74.95
Video Digitizer 139.95
Writer 59.95

HOLMES & DUCKWORTH
Toolbox 29.95
Forth 49.95
Base 99.95

INFOCOM
A Mind Forever Voyaging 44.95
Bally Hoo! 49.95
Cutthroats 39.95
Deadline 22.95
Enchanter 39.95
Hitchhikers Guide 28.95
Infidel 44.95
Planetfall 22.95
Seastalker 22.95
Spellbreaker 49.95
Sorcerer 44.95
Starcross 49.95
Suspect 44.95
Suspended 49.95
Wishbringer 39.95
Witness 39.95
Zork I 22.95
Zork II 44.95
Zork III 44.95

KUMA
K-Ram 29.95
K-Comm 49.95
K-Seka 49.95
K-Spread 49.95

LASER SOFTWARE
LASER SOFTWARE INT'L
Laserbase 99.95
Address Book 19.95
Database 29.95
Diary 29.95

MARK OF THE UNICORN
PC Intercomm 129.95
The Final Word 149.95

METACOMCO
Lattice C 99.95
Meta Pascal 89.95
Macro Assembler 49.95

MICRODEAL
Flipsides 19.95
BBS 29.95
Calendar 19.95
Direct File Transfer 29.95
Disk help 29.95
Kissed 29.95
M/Disk & Soft Spool 19.95
MI-Term 29.95
Mudpies 19.95

MICRAPH
Easydraw 149.95

OASIS
Sundog 39.95

PSYGNOSIS
Bratticus 34.95

T.D.I.
Modular II 99.95

TALENT
Ram Disk & Print Spool 24.95
Talisman 89.95
Zkul/West 24.95

PLUS any software that is currently available.

Offer ends 30th June 1986. **An S.E.C.S. Company.**

WRITE or PHONE for a FREE CATALOGUE to:

ACTION SOFTWARE SUPPLIES
31 Stoneyhurst Road,
Erdington,
Birmingham B24 8HA

Tel: 021-373 7442

+ FREE DELIVERY
'who can offer you more?'

PLEASE RUSH ME YOUR LATEST CATALOGUE
NAME .....
ADDRESS .....
.....
I own a 520/1040ST AU1

Give your memory a boost

Peter Connors and Andrew Bennett look at two ways to expand the ST

THERE were times when I could have eaten the carpet, far less chewed it, when doing some C compilations recently, and for several reasons.

Firstly my disc-based TOS was an early version that bombed every half-hour or so – this doesn't happen with version 1.9, the final one.

Secondly I only had a one double-sided drive and the TOS didn't leave room for a RAM disc of the size I needed. Even if I laid hands on a ROMmed TOS I knew I would still have difficulties with the 400k+ of files that I wanted to keep on the RAM disc.

The only answer was more memory, and although there are now proprietary add-on boards for the ST, I chose a way of doing this by adding an extra 512k bank of RAM which was passed around the US micro networks recently by Gert Slavenberg, who included C source code for setting up a RAMdisc. It cost me £62 and these are my experiences with the memory addition . . .

It is scary, and opening up your ST will void the guarantee unless it is done by your dealer – he foots the bill when it comes to guarantees anyway. My 520ST was three months old when I did it, but I reckon that if a fault hasn't surfaced on a micro in the first week you're unlikely to get any – except from old age, and all micros are obsolete long before then.

Don't attempt it unless you've successfully done some soldering on fine printed circuit boards. Otherwise it is absolutely straightforward and should only take a couple of hours. You'll need a soldering iron fine enough to solder individual legs of an IC without making solder bridges to adjacent legs, a solder sucker for removing components from the board, a yard and a half of thin insulated hookup wire and lastly 16 256k 150nsec DRAMs – I used NEC chips like the ones already in the ST. These RAM chips are the major cost of the modification and if you shop around you may get them for £3 a throw.

With the door locked, a clean table top to hand and the soldering iron warming up, begin by switching off the ST and removing all leads. Turn it over and use a Philips cross-headed screwdriver to remove three long screws at the back and three medium screws at the front.

Turn the ST back over and remove the top, putting it somewhere you won't step on it. It is now possible to lift the keyboard unit enough to see where it plugs into the main board – unplug it and put it somewhere safe. You can't put the plug back the wrong way on reassembly because it is keyed.

You should now be looking at a tin can which screens the main board. Remove three medium screws holding down the front of the screen and three short screws that are visible through the round holes in the top of the screen toward the back. Now lift out the whole board complete with screening, making sure that the connectors at the rear come clear of the holes in the lower half of the ST casing. This is easiest done by lifting the front of the board assembly and lifting it clear of the moulded pillars that stick up from the lower casing. These are visible through the oval holes in the top of the screen.

Put the board assembly on a surface where you have the soldering tools and extra components to hand.

Carefully untwist nine screen retaining lugs and unsolder the remaining two, and you should now be able to lift the top and bottom screening away, leaving the main board to work on. My board said it was a revision 2B, but as far as I know ST boards only changed radically with the advent of the 1040ST, which has a completely different layout and socketed RAM.

From now on left and right means looking at the top of the board with the RAM lineup toward you.

Take the 16 new RAM chips and bend up pins 4 and 15 on each so that they are horizontal. Snip off the excess length of these at the shoulder, leaving enough pin to solder to. Lay them on one side. Locate the decoupling capacitors adjacent to each RAM chip on the ST board. These have to be temporarily removed to make access during later stages easier.

Carefully disconnect them from the board by bending their excess lead straight on the underside of the board and desoldering so that the holes are clear for later remounting. Don't pull at the body of the capacitor or it might break – use the leads to free it. If you do break one you'll need to get 220nF decoupling capacitors of the same size to replace them.

Take each of the new RAM chips and piggyback them on to the existing chips, making sure you have the pins the right way round. It helps to make them a snugger fit if you have bent the pins of the new chips inward a little to help the grip.

Use your fine soldering iron to solder each of the new RAMs to the existing ones. Check the joints on each chip as you finish because dry joints are easier to rectify now than later – a magnifying glass and a strong light helps. When all the chips are mounted and checked you can replace the capacitors.

Take the insulated hookup wire and connect pin 4 of all the new RAMs together, going right to left one at a time. Connect pin 4 of the far left RAM through the round hole in the board below and left of U15 to pin 18 on the underside of U15

→

– the ST's MMU chip. The pins on this are numbered on the top of the board so it is easy to locate pin 18 among the staggered connections on the underside.

Now connect pin 15 together on the eight new RAMs on top of U45 to U32 and connect the far left pin 15 of these through the round hole to pin 22 of U15. Do the same for the RAMs on U30 to U16, taking a connection through to pin 21 of U15.

What you have done is used the MMU's unused Bank 1 control lines for the new memory. None of the connections to the RAMs should stick out above the top of the new chips too far. If they do you stand the chance of fouling the top screen when it is replaced.

Check everything again. Are your solder joints above suspicion? Is everything back? Have you connected to the right pins on U15? If you're happy, you can either reassemble the screen and case before verifying success or you can put it on to a clear surface and connect up power, disc and monitor to check the modification. Either way reassembly is the reverse of assembly.

If TOS boots up correctly you've not blown anything. If it doesn't boot then switch off and check everything very carefully, especially for solder bridges between adjacent pins. If it still won't boot then you may have zapped your existing RAM.

Although my ST booted fine the first time it claimed that there wasn't any extra memory there. TOS runs a check on how much memory there is on switch-on and adjusts system variables accordingly. My modified ST still had only 512k according to TOS. I checked my work and found that I had three out of 259 dry joints. Resoldering these and rebooting found me with a megabyte of RAM.

If after checking you can't get TOS to recognise the extra memory then you'll need something like the SID in the Development Pack to examine which bits of the new memory you can write to. This way you can track down which chips in the new RAM may be faulty.

To check the memory is there you can simply print fre(0) in STBasic. The result will be 512k bigger than you used to get – about 550k with TOS on disc.

If you poke about in the screen memory area you'll have to add $8000 to all your values from now on because TOS puts video RAM in the last 32k of whatever memory it finds. Have fun.

Peter Connors

The 1mbyte upgrade

AT the recent Atari User show a company called Advanced Systems and Techniques (AST) introduced a 512k upgrade board for the 520ST. Installing this board will give 1mbyte of memory, as much as the new 1040ST.

The board measures about 2in by 4in and looks professionally constructed. It comes with a simple instruction sheet which should tell those experienced in electronics all they need to know. To install it you must first disconnect all the leads from your ST then open it up and remove its circuit board. To do this you must unscrew some 12 screws and undo about 15 fastenings.

Then one chip must be removed from its socket and placed into a socket on the AST upgrade board. The AST board is then plugged into the empty socket on the ST board. Thirteen wires on a ribbon cable are then soldered to various legs of two of the ST's chips. Finally the ST can be reassembled and tested.

The whole installation process should take no more than two hours, but extreme care must be taken at every stage. A mistake at the soldering stage can leave you with a dead ST and the upgrade should not be attempted if you don't have previous soldering experience. If you don't feel confident enough to install the upgrade yourself AST will do it for you.

Of course opening your ST and installing the board will invalidate your Atari guarantee. Included in the price of the board is a guarantee of your ST for the remainder of its first year. The upgrade itself is guaranteed for 12 months.

With 1mbyte of memory you will have about 900k free with the system in ROM and about 700k if your system is still on disc. This extra memory allows you to assign huge amounts of memory for RAM discs and print spoolers. A large RAM disc will speed up your everyday work because you can use it as you would a normal disc and then save it before you turn off or reboot the ST.

Giving over a large amount of memory for a print spooler will mean that when you print out a document you will be able to do something else with your ST while the spooler prints the document from the extra memory.

Luckily most of today's ST software has been carefully written to make use of extra memory if available. For example, with the upgrade installed Basic now has about 760k for programs and STWriter has space for about 711k of documents. Subtract 200k from these values if you have your system on disc. You should also be able to use larger databases and bigger spreadsheets with the upgrade.

The cost of the board is £99.95. This includes a 12 month guarantee, and installation if required. There are two different versions of the upgrade, one for the 520ST and one for the 520STM.

AST is also developing a 2mybte upgrade board which will take available memory up to 2.5mbyte. This should cost about £400.

Andrew Bennett

Q A SHAPE OF SOUNDS TO COME

AS you know, Atari Basic has two commands for producing sound – SOUND and WAVE. They can produce a large variety of sounds, but you may have to experiment to get the exact effect or note that you want to use in your programs.

Unfortunately, use of the Wave command has been limited by the fact that Atari missed out a set of shape diagrams – shown here in Figure 1 – from page C158 of the ST's Basic manual. Each graph shows volume against time. Armed with these, you should now be able to produce all the sounds that you want.

Since late last year a three page article has been floating around the computer clubs and bulletin boards. It tells how you can upgrade your 520ST from 512k to 1mbyte by buying the required chips and soldering them into the ST yourself.

If you are feeling brave, read Peter Connors' article in this issue which takes you through the upgrade step by step. Although it warns about possible problems if you make a mistake while upgrading, I don't feel that it mentions them all.

Soldering the 16 new memory chips on to the backs of the ones already in the ST is hard enough, but you must also contend with the slight idiosyncracies that your particular ST might have. It is possible to do the upgrade correctly and still have it not work.

The memory controller (MMU) chip in some early STs could not handle 1mbyte and must be swapped for the latest version. Even the thickness of the wire you use in the upgrade can make a difference. All in all, DIY upgrades should be left to those who have the electronic equipment to solve any problems that may arise. If you do not fall into this category, and you still wish to upgrade, you should strongly consider using a board such as the one from AST reviewed in this issue.

By now many of you will be considering upgrading your 520ST by adding the Gem and TOS ROM chips. Unfortunately, upgrading isn't simply a matter of throwing the new chips into their sockets. There have been many subtle changes in the area of the 520ST's circuit board near to the ROM sockets.

Each type of board requires a slightly different method for upgrading. Some require that you make or break certain links on the board. If you feel confident enough to make such alterations yourself, make sure that you get a copy of the full Atari upgrade instructions with your ROM chips. The instructions consist of about five pages of text and diagrams. If you don't feel confident enough then you should let your friendly neighbourhood dealer do the upgrade for you. Don't forget that if you do the upgrade yourself, and find you have damaged the computer, then you may find that your guarantee is void.

Even when you have your system in ROM, life can still be difficult. When you reset or turn on your ST the system will look for a disc in the drive. It will then load the DESKTOP.INF file and any desk accessories that may be on the disc. If there is no disc, or the drive is off, the ST can take over 30 seconds to boot up.

If you try to boot up with your old system disc the ST will load the old TOS as before, making it easy to believe that the ROMs don't work. The best solution to all this is to use your old system disc as your boot up disc after having first deleted the TOS.IMG file from it. Your desktop will then look exactly the same as before.

Send your Atari ST queries to: ANDREW BENNETT, Atari ST User, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY

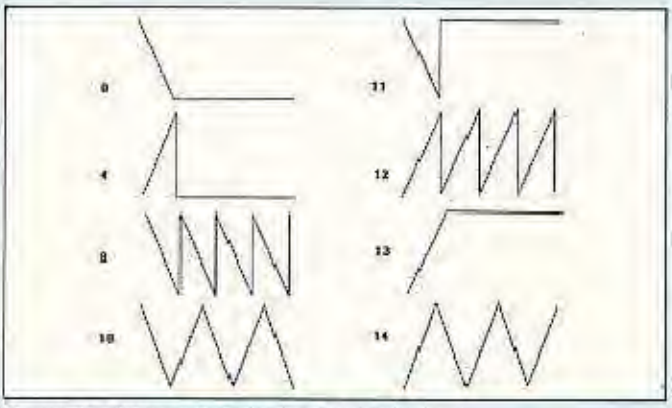


Figure 1: The diagrams missing from the ST's Basic manual

Problems, problems

FIRST letter this month comes from Stathis Konstantinou in Greece who asks about dumping the graphics produced by his Basic programs to his printer. This can be achieved by simply pressing the Alt and Help keys together with the printer turned on. You should also set the "pixels per line" setting in the Install Printer desk accessory to 960.

This method of screen dumping will work from most programs. The only one that I have so far come across that does not allow this is the Megaroids game, but I'd be interested if any of you have discovered any other programs that don't work with Alt-Help.

Mr Konstantinou also wants to know if there is a good book covering the ST's operating system, and in particular the Virtual Device Interface and the Application Environment

Services. I briefly discussed both of these a few months ago, but to discover their uses more fully you might consider buying one of the books on the subject that have emerged recently. The best of these are: Gem on the Atari ST from 1st Publishing, and The User's Guide to Gem and TOS, from Compute! books.

Jim Taylor from Sunderland asks whether it is possible to change the time and date given in the control panel to English format. The answer is that the discs being shipped by Atari with the 1040ST and 520STM machines have a revised version of the CONTROL.ACC file which works in UK format. Simply pop into your dealer and ask for him to copy it on to your old disc.

Garry Thomson, from Farnham, wants to know how to save the page layout form in 1st Word so that he does not have to redefine it every time he loads 1st Word. GST tell me that when you save a document the page layout is also saved. The solution is therefore to create a blank document and save it, having first set the page layout form to your required values.

When you wish to start a new document simply load up your blank document and the layout form will already be set up as you want. GST also tell me that the firm cannot normally answer questions over the phone. If you have a question regarding 1st Word you must write in.

A. Poole has another problem with 1st Word. Every time he prints out a document the printer wastes paper by advancing extra sheets. The solution lies in one of two places.

Version 1.01 of 1st Word contained a bug which wasted paper in this way. This problem has been fixed in version 1.06, which is available free from your dealer. The other possible solution lies in the configuration file for your particular printer. It may contain the code for form feeding and your printer may not need a form feed. If you change this file, the printer should work from now on.

Barry Wilshaw, of Felixstowe and many others have written in with printer compatibility problems. The main problem seems to be that the printer prints a blank line between every one sent out by the ST. The answer is to turn off the auto-line feed DIP switch inside your printer. To do this you will have to refer to your printer manual.

Many of your printer problems can be solved simply by checking that all of the DIP switches are set correctly for the ST.

● *That's it for another month. Next time I'll be trying again to solve more of your problems, so keep the questions rolling in.*

Q A

THATS OUR

AS&T LTD GUARANTEE

Advanced Systems and Techniques Ltd. offer a specialist ATARI ST service and guarantee. All products are tested prior to despatch to ensure customer satisfaction. We offer unlimited advice together with a fast personal service.

COMPUTERS

520STM £399.00
1040STF Mono System £918.00
1040STF Colour System £1148.00

PRINTERS

Juki 5510 ..... £269.00
MP165 ..... £229.00
Citizen 120D £170.00
Citizen MSP10 ..... £279.00
Star NL10 ..... £239.00
Quendata 1120 ..... £170.00
Printer Leads from ... £15.00

DISC DRIVES

SF354 ..... £149.00
SF314 ..... £199.00
AST1000
1 MGBYTE Double Sided slimline drive in a metal case with all connecting leads to join with your existing SF354/SF314 only £99.00
Data leads £15.00

SYSTEMS

520STM with MP165 Printer, SM124 Monochrome Monitor, Twin AST1000K Drives, mounted in a plynth, Box of Paper, Discs, and all cables, manuals and software.
RETAIL PRICE £1054.60
SPECIAL OFFER PRICE £995.00
SAVING £59.60

1040STF Colour System with AST1000K Second Drive, mounted in a plynth, Juki 5510 Printer, Box of paper, Discs and all cables, manuals, and Software £1500.00

ACCESSORIES

SM124 Monochrome Monitor .. £149.00
Atari Colour Monitor £399.00
Philips CM8533 ..... £299.00
AST Plynth £23.00
AST System Case £39.00
Box of 10 Discs £27.60
Box of 2000 sheets of fanfold paper £15.00

To order any of the above products call AS&T on:
0702 618201

ACCESS/VISA WELCOME

Please make cheques payable to:
AS&T LTD

ALL PRICES INCLUDE VAT AT 15%

CARRIAGE
Disc Drives £5.00 Computers £9.00 Printers £9.00
Monitors £9.00 Other Accessories £2.50

Advanced Systems and Techniques Limited
87 Bournemouth Park Road
Southend-On-Sea
Essex SS2 5JJ
Telephone: 0702 618201

ALL PRICES CORRECT AT TIME OF GOING TO PRESS